

Feb-46

INTERNATIONAL CITY MANAGERS' ASSOCIATION
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MUNICIPAL REGULATION OF INDUSTRIAL WASTE DISPOSAL

What methods are cities using in regulating the discharge of industrial wastes into the sewerage system and in financing the cost of treatment?

The tremendous acceleration of industrial activity during the war period has accentuated the problem of industrial wastes treatment and disposal. The extent of the problem is indicated by the fact that the volume of such wastes in the United States is equivalent to the sewage pollution of approximately 60,000,000 persons as compared with the treatment at central sites of the domestic sewage of about 30,000,000 persons. For example, one industrial plant in New Brunswick, New Jersey, a city with a population of about 33,000 in 1940, was discharging into the sewers in 1944 as much waste as would come from a city of 200,000.

One solution to the problem is for industry to treat its own wastes and discharge the effluent into a diluting stream. Many industrial plants follow this practice, in which case the municipality is not involved. Another way is for industrial wastes to be discharged into public sewers. A third method is for industry to pretreat the wastes to make them less difficult to carry through sewers and discharge the partially-treated wastes into the public sewer permitting the city to complete the task. A fourth procedure is to build two separate treatment works at the city sewage works site, one to treat the industrial wastes and the other to treat the city sewage and the previously treated wastes. A state circuit court in Wisconsin in September, 1943, held that Kenosha could refuse to accept for treatment at its sewage disposal plant industrial wastes which interfered with the successful operation of the plant.

When industrial wastes are discharged into city sewers public policy calls for regulation as to the amount and strength of wastes, some kind of pretreatment at the plant before discharge into the sewers, prohibition of discharge of certain types of wastes, or some combination of these plans. A few industrial plants in certain regions may provide their own treatment and disposal system, but the general opinion and practice seems to be that municipalities should handle industrial wastes if they are treatable, if they do not interfere too much with the operation of the treatment plant, and if they do not affect the sewerage system. New Brunswick, for example, had considered requiring the industry to use a separate disposal system or to pretreat its waste, but it was pointed out by consultants that disposal in the municipal system with little or no pretreatment was more economical and effective.

Because of the cost of handling industrial wastes and increasing number of cities are regulating the discharge of such wastes into public sewerage systems and are levying special charges based on volume, solid content, and strength of the wastes. If the characteristics of the material interfere unduly with efficient plant operation or increase costs disproportionately, the industry may be required to alter its practice to correct the objectionable features, either through reducing peak flows, construction of equalizing tanks, or partial pretreatment. Industry is sometimes required to hold its wastes between pH 6.0 and pH 10, but it is difficult to hold strictly to such a rule because a small quantity of very acid waste can be absorbed in the flow of domestic sewage without materially affecting the final acidity of the mixture. The specific pretreatment required in any individual case naturally depends upon the characteristics of the waste. Many state

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health departments have adopted regulations or have done research work and made suggestions on the treatment of the various classes of wastes. The possibility of recovery of by-products to pay for pretreatment should not be overlooked.

Where quantities involved are small the volume discharged is ordinarily determined by metered consumption of water used by the industry. If there is a private water supply or if more than 20 per cent of metered water does not reach the sewer, provision is made for measuring the actual discharge.

One method of securing a fair distribution of cost between industrial and residential users and among the various types of industrial users of the sewerage system is found in New Brunswick, New Jersey. This city adopted a schedule of rates for industrial users designed to meet about one-half the cost of operating the sewage disposal plant. The rates per quarter are: \$22 per million gallons of flow, \$5 per ton of solids in wastes, and \$5 per 100 pounds of chlorine required to treat the waste. An industry which contributes waste that is twice the strength of domestic sewage would pay about \$42 per million gallons of flow treated. Volume of flow is measured by metered water consumption if the total annual charge is less than \$1,000; if it is more the industry is required to install a device approved by the city to record the quantity actually discharged. Provision is also made for metering the discharge if the industry uses a private water system and for adjustment if more than 20 per cent of the annual volume of metered water used does not reach the sewer.

Industries in New Brunswick are required to adopt schedules which will minimize peak concentration of waste discharge without interfering with production. If the characteristics of the wastes interfere unduly with the efficient operation of the plant or increase the costs disproportionately, the industry must alter its practice to correct the objectionable features before discharge, either through reducing peak flows, construction of equalizing tanks or partial pretreatment (see PUBLIC MANAGEMENT, June, 1944, pp. 175-76).

Other types of financing arrangements are illustrated by plans in effect in North East, Pennsylvania, (3,704); Cranston, Rhode Island, (47,085); and Waco, Texas, (55,982). The town of North East provides that industrial waste may be discharged through sewers only under a permit issued by the town and that the company must install and operate necessary pretreatment equipment at its own expense. The town does not levy a special fee or charge. Cranston, in addition to adopting the same rate as New Brunswick, makes an additional charge based on the number of employees. Industries employing 10 or less employees pay a fee of \$25 and those with more than 10 employees \$50 a year. Cranston also adopted a schedule of sewer rentals for private dwellings. The Waco ordinance, adopted early in 1945, provides for a sliding scale rate schedule for packing plants, laundries, and bottling works based on the amount of the water bill. Industrial users that do not come under these three classifications are charged on the basis of the strength of the sewage. Sewer service charges also are levied on residences, hotels, commercial establishments, and all other places using the sewerage system.

For technical information on the treatment of industrial wastes see the October, 1945, issue of Sewage Works Engineering (Case-Sheppard-Mann Publishing Corporation, 24 West 40 Street, New York 18, 25 cents).

NOTE: See attached supplement for ordinances of New Brunswick, New Jersey, and Waco, Texas, on regulation of industrial waste disposal.

SAMPLE ORDINANCE PROVISIONS ON REGULATION OF
INDUSTRIAL WASTE DISPOSAL

The ordinance of New Brunswick, New Jersey, has attracted considerable attention because of the formula involved and also because the charges apply only to industrial users. For these reasons the New Brunswick ordinance is reproduced in full below. Another type of ordinance is represented by the Waco, Texas, sewer rental ordinance which provides sliding scale charges for various types of users; only the portion of the ordinance applying to industrial users is reproduced below.

New Brunswick, New Jersey. AN ORDINANCE REGULATING THE DISCHARGE OF INDUSTRIAL WASTES INTO THE SEWERAGE SYSTEM OF THE CITY OF NEW BRUNSWICK, AND PRESCRIBING RULES, REGULATIONS AND SCHEDULE OF CHARGES FOR THE TREATMENT OF INDUSTRIAL WASTES.

WHEREAS the City of New Brunswick has constructed and operates a municipal sewage treatment plant, together with a system of collecting sewers, pumping stations and appurtenances; and

WHEREAS the municipal plant is in general adequate for a normal domestic sewage load of approximately twice the present population of said city, and

WHEREAS the municipal plant has been and currently is seriously overloaded due to excessive quantities of highly concentrated industrial wastes--to the extent that solids removed--filtered--and hauled to disposal have averaged four or more times the total sludge solids from the entire population of the city; and

WHEREAS the overload created by industrial wastes has greatly increased the cost of operation, maintenance, repairs and depreciation of the municipal plant:

THE BOARD OF COMMISSIONERS OF THE CITY OF NEW BRUNSWICK DO ORDAIN:

1. So far as practicable--industrial wastes may be discharged into the city sewer system--with a minimum of, or without pre-treatment, provided the consent of the Board of Commissioners of the City of New Brunswick is first had and obtained; and the rules, regulations and charges herein fixed and prescribed by the treatment of industrial wastes or industrial sewage are complied with.

2. The charges for factory effluents or industrial wastes discharged into the city sewers or tributaries thereof, shall be fixed and determined according to flow, suspended solids and chlorine demand, according to the following schedule of rates:

\$22. per million gallons.

5. per ton sludge solids.

5. per 100 lb. chlorine demand.

3. The charges herein fixed shall be payable and billed quarterly on the first days of January, April, July and October of each year, and shall be a lien upon the premises connected with the sewer system until paid.

4. Before factory effluent comprising wastes other than domestic sewage can be discharged into the municipal sewer system, the following rules, regulations and conditions must be complied with:

(a) Industries shall at all times cooperate by adopting such schedules of discharge as well, without interfering with factory production--minimize peak concentrations.

(b) In the event that the materials, chemicals in, or characteristics of wastes from any industry, interferes with the efficiency of operation of the municipal plant, or unduly increases the cost thereof, then, said industry shall; by reducing its peak discharges; by construction of equalizing tanks; by partial pre-treatment; by elimination of troublesome wastes; or by other approved means; produce wastes of acceptable quality before discharge to the city system.

(c) The extent of difficulties and to agree the cost of handling the wastes from one industry may be mitigated or aggravated by wastes from another industry. Accordingly, it is not deemed practical to set at this time, any numerical standards

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or limitations on concentration or quality. Therefore it is the intention of these rules and regulations to allow maximum latitude in the use of the municipal system-- and to require control or special procedure by industry only in such cases as the failure so to do would seriously affect the operation of the municipal plant or would entail unwarranted expenditure at said municipal plant.

5. MEASUREMENT OF FLOW

(a) Each industry for which estimated charges will exceed \$1,000 per year-- shall install a suitable device for continuously recording the flow discharged to the city system. Plans for complete metering installation shall be submitted to the city for approval.

(b) In the case of industries for which the total annual charge is estimated to be less than \$1,000--the volume of flow used in computing charges shall be based upon metered water consumption.

(c) In the event that evidence is presented indicating that more than 20 per cent of the total annual volume of water used for all purposes does not reach the sewer, an estimate will be made of the proper amount to be deducted.

(d) Where industries have a private water supply--all or part of which is discharged to the sewer--the amount of such supply or the part thereof discharged to the city system--shall be metered and included in the charges made.

6. DETERMINATION OF CHARACTER AND CONCENTRATION OF WASTES:

(a) Means shall be provided at each plant to allow periodic determination of character and concentration of wastes as a basis for charges for sludge solids and chlorine demand. Such determinations will be made at least twice a year; or, if deemed necessary, quarterly, immediately prior to the date of quarterly payments. Determination of character of the wastes will be made by the city and shall be binding as a basis for charges.

(b) In the event that the character of the wastes as discharged do not provide representative data as to actual costs--then charges shall be based upon full scale tests at the municipal plant or upon estimates based upon representative data.

(c) Samples shall be collected in such manner as to be truly representative of the actual quality of wastes--and standard methods of analysis will be used.

7. CHANGES AND ADJUSTMENT OF RATES

(a) It is intended that the rates hereinbefore set forth shall become effective as of January 1, 1944, and will prevail until such time as they are found to substantially exceed--or yield substantially less than the actual cost of service rendered.

(b) The amounts charged will vary from quarter to quarter with the volume of flow and quality of waste as determined from records, tests, samples, and analysis.

(c) In the event of changes in requirements of the Department of Health of the State of New Jersey and consequent changes in process and cost, the charges shall be subject to revision.

8. Any person, firm or corporation who shall violate any of the provisions of this ordinance shall be subject to a fine of not exceeding two hundred dollars (\$200) or imprisonment for thirty days, or both, in the discretion of the Magistrate; each day that a violation is permitted to exist, shall constitute a separate offense.

9. If any of the provisions of this ordinance or the application of any provision hereof, to any person or circumstance, shall be held invalid, the validity of the remainder of the ordinance shall not be affected thereby.

10. The term person, includes individual, partnership, association, or any other organized group of persons or legal successors or representatives, if any, of the foregoing.

11. All ordinances or parts of ordinances, rules, or regulations, in conflict with the provisions of this ordinance are hereby repealed.

12. This ordinance shall take effect immediately.

Adopted on first reading, Tuesday, February 8, 1944.

February, 1946

SAMPLE ORDINANCE PROVISIONS ON REGULATION OF
INDUSTRIAL WASTE DISPOSAL (Continued)

Waco, Texas. Schedule D of Sewer Rental Ordinance of Waco, Texas, adopted January 2, 1945, reads as follows:

Industrial sewerage waste being more costly and more difficult to handle by the sewage system of the City of Waco due to the injurious material and Biochemical Oxygen contained in said sewage, therefore, in order that industrial sewage may pay its fair, reasonable and just cost for the use or rental of the sewer system furnished by the City's municipal sewer system in line with the rental charges of the other users, all persons, firms or corporations using the sewer system or the sewer lines of the City of Waco and either directly or indirectly discharging industrial sewage waste into the system of lines shall be charged the following rates:

All Packing Plants, all Poultry Plants and all Milk Plants a charge of 40 per cent of the user's monthly water bill shall be made where such water bill does not exceed \$10.00. Where the user's monthly water bill is in excess of \$10.00 but does not exceed \$20.00 a charge of 40 per cent shall be made on the first \$10.00 and a charge of 35 per cent of any amount in excess of \$10.00 to \$20.00 shall be made. Where the user's monthly water bill is in excess of \$20.00 but does not exceed \$50.00, a charge of 40 per cent shall be made on the first \$10.00 and a charge of 35 per cent shall be made for all in excess of \$10.00 to \$20.00 and a charge of 25 per cent shall be made for all in excess of \$20.00 to \$50.00. Where the user's monthly water bill is in excess of \$50.00 a charge of 40 per cent shall be made for the first \$10.00 and a charge of 35 per cent shall be made for all in excess of \$10.00 to \$20.00 and a charge of 25 per cent shall be made for all in excess of \$20.00 to \$50.00 and a charge of 15 per cent shall be made for all over \$50.00.

All Laundries, a charge of 35 per cent of the user's monthly water bill shall be made where such water bill does not exceed \$10.00. Where the user's monthly water bill is in excess of \$10.00 but does not exceed \$20.00 a charge of 35 per cent shall be made on the first \$10.00 and a charge of 25 per cent of any amount in excess of \$10.00 to \$20.00 shall be made. Where the user's monthly water bill is in excess of \$20.00 but does not exceed \$50.00 a charge of 35 per cent shall be made on the first \$10.00 and a charge of 25 per cent shall be made for all in excess of \$10.00 to \$20.00 and a charge of 20 per cent shall be made for all in excess of \$20.00 to \$50.00. Where the user's monthly water bill is in excess of \$50.00 a charge of 35 per cent shall be made for the first \$10.00 and a charge of 25 per cent shall be made for all in excess of \$10.00 to \$20.00 and a charge of 20 per cent shall be made for all in excess of \$20.00 to \$50.00 and a charge of 10 per cent shall be made for all over \$50.00.

All Bottling Works, a charge of 30 per cent of the user's monthly water bill shall be made where such water bill does not exceed \$10.00. Where the user's monthly water bill is in excess of \$10.00 but does not exceed \$20.00 a charge of 30 per cent shall be made on the first \$10.00 and a charge of 20 per cent of any amount in excess of \$10.00 to \$20.00 shall be made. Where the user's monthly water bill is in excess of \$20.00 but does not exceed \$50.00 a charge of 30 per cent shall be made on the first \$10.00 and a charge of 20 per cent shall be made for all in excess of \$10.00 to \$20.00 and a charge of 15 per cent shall be made for all in excess of \$20.00 to \$50.00. Where the user's monthly water bill is in excess of \$50.00 a charge of 30 per cent shall be made for the first \$10.00 and a charge of 20 per cent shall be made for all in excess of \$10.00 to \$20.00 and a charge of 15 per cent shall be made for all in excess of \$20.00 to \$50.00 and a charge of 5 per cent shall be made for all over \$50.00.

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Any industrial user of the City's municipal sewer system who does not fall within any of the above categories of industrial users, said person, firm or corporation shall be charged a sewer service or rental charge based on the amount of strength of said sewage, which said charge or rental shall be determined by the City Manager of the City of Waco, Texas, subject to review by the Board of Commissioners of the City of Waco, Texas.

In the event any person, firm or corporation who is an industrial user of the sewer system and sewer lines of the City of Waco and whose water is not supplied wholly by the City of Waco, and where the bill for the water used thereon or therein in this event would not clearly show the amount of sewage said industrial user was putting into the City's municipal sewer system, then in such case the amount of water so used shall be otherwise measured or determined by the City Manager of the City of Waco in order to determine the fair and reasonable charge to be made for sewer services provided in this ordinance and these users shall be billed accordingly.

The discharge of industrial sewage wastes into the storm sewer system or storm water drainage system of the City of Waco is hereby prohibited.